ATHLETIC SHOE FRAME

Cross -Reference to Prior Application

This application claims the benefit under 35 USC §119(e) of United States provisional application serial no. 60/426,003 filed Nov. 14, 2002.

Background of the Invention

1. Field of the Invention

This invention relates to athletic shoes, and more particularly to arrangements for the stabilization of athletic shoes.

2. Description of the Related Art

Conventional athletic shoes such as running or jogging shoes use various arrangements for controlling pronation during the gait cycle. Pronation is the inward roll from toward the medial side of a shoe following heel contact with a running surface.. This in turn causes the foot shod with the shoe to roll inwardly. Over-pronation is undesirable and can lead to various foot problems, such as inflammation, swelling and pain in the knee, a condition commonly known as "runners knee".

Presently in an effort to control pronation, most shoe companies use a dense material on the medial side of the shoe. Another existing shoe design uses a nylon plate sandwiched between the midsole in a wave fashion, but the design does not provide forefoot protection from midsole breakdown. Other shoe designs use plastic strips attached to the medial side of the midsole, as in U. S. patent No. 5,279,051 to Whatley.

Despite the various shoes in the prior art that are designed to control pronation, there has not been a suitable solution to the foregoing problems and shortcomings of existing athletic shoes. It would be desirable to provide a shoe design which is more stable for controlling over-pronation and alleviating many of the undesirable

consequences from such over-pronation.

Objects of the Invention

It is a general object of this invention to provide a new and improved stable athletic shoe which has more stability than existing shoe design.

Another object is to provide an athletic shoe of the type described that is more effective in controlling over-pronation.

Another object is to provide an athletic shoe of the type described that provides good stability and is also light in weight.

Another object is to provide an athletic shoe of the type described that provides forefoot protection from midsole breakdown along with enhancing performance.

Another object is to provide an athletic shoe of the type described that allows for an inexpensive method of manufacture and easy tooling.

Other objects and advantages are provision of a cushioned midsole without adding excess weight, spreading cleat pressure without inhibiting sole flexion, and balancing the need for traction and cushion in a sole without adding excess thickness.

Brief Description of the Drawings

Fig. 1 is a perspective view of a shoe frame which forms a component of an athletic shoe employing the invention.

Fig. 2 is a perspective view of the shoe frame of Fig. 1 shown in one step of the method of assembly with a combination upper and midsole subassembly of the athletic shoe.

Fig. 3 is a fragmentary cross-section view to an enlarge scale showing the sandwich

construction of one depression of the shoe frame fitted into a corresponding seat of the midsole.

Description of the Preferred Embodiments

In the drawing Fig. 1 illustrates generally at 10 a shoe frame which forms a part of the shoe stabilizing structure of the invention. Fig. 2 shows the shoe frame in one step of the shoe manufacturing method in which the frame is positioned above and just prior to being assembled with a combination upper and midsole subassembly 12.

Shoe frame 10 is formed by a suitable molding process from a thin plate of nylon, graphite or high density compression foam material. The frame is comprised of heel portion 14, side rails 16, 18 and 20, forefoot portion 22, and toe portion 24. These heel, rail, forefoot and toe portions are horizontally flat for sandwich fitment between the combination upper and midsole subassembly 12 and an insole 42, as shown in Fig. 2. A plurality, shown as seven, of U-shaped, downwardly projecting depressions 26-40 are formed along both sides of the frame.

Combination upper and midsole subassembly 12 of Fig. is comprised of a midsole 44 on which the walls of an upper 46 are carried. The upper can be formed integral with the midsole, or it can be a separate part that secured as by an adhesive or a suitable bonding process with the midsole. The perimeter of the midsole is formed with the same number of recessed seats 48-50 as there are frame depressions 26-40.

Midsole seats 48-50 are sized and shaped commensurate with the depressions, and are also positioned on the midsole so as to closely fit with respective depressions as the frame is dropped down onto the midsole as one step in the method of assembly. In the next step, insole 42 is fitted down onto the top of the frame. An outsole 52 is fitted across the bottom of the midsole. The bottom surface of the outsole can be formed with traction elements, such as the illustrated waffle shaped lugs 54.

Fig. 3 shows the fitment of frame depression 36 into midsole seat 50. The other frame depressions and midsole seats fit together in a similar fashion. When assembled together, the depressions are tightly captured between the insole and seats.

While the frame depressions are shown as U-shaped, the invention contemplates that they can be of any desired size and shape. Further, the depressions can extend all the way down to where they touch the outsole, or they could extend to only a short distance below the top of the midsole, as desired.

In use, when the user's shod foot strikes a running surface, the resulting upward force on the outsole and midsole is carried up into the frame, insole and user's foot. The depressions act in the manner of anchors in the material of the midsole such that frame 10, the insole and user's foot are stabilized against significant displacement. This action controls pronation by minimizing distortion of the midsole as the shoe is weighted during the gait cycle.

Other modifications can be made in accordance with the true spirit and scope of the invention as set forth in the appended claims.